

## Desho grass (*Pennisetum pedicellatum*) for livestock feed, grazing land and soil and water management on small-scale farms

### Objectives:

- To introduce highly palatable, nutritious and fast growing grass characterized by high leaf/stem ratio
- To improve grazing land management, combat declining productivity and carrying capacity of the grazing land, and
- To stabilize the physical soil and water conservation structure.

### Description:

- Desho is an indigenous grass of Ethiopia belonging to the family of Poaceae (Welle et al. 2006; Smith 2010)
- It is a perennial grass which has an extensive root system that anchors well with the soil (SLM Ethiopia)
- It has a high biomass production capacity 30–109 t/ha (Ecocrop 2010)
- It grows upright with the potential of reaching 90–120 cm based on soil fertility (SLM Ethiopia; Shiferaw et al. 2011)
- It can grow anywhere from 1500–2800 masl with optimum elevation over 1700 masl on medium to low soil fertility (SLM Ethiopia)

### Uses:

- A year round livestock fodder (SLM Ethiopia)
- For erosion control through strip planting (SLM Ethiopia; Welle et al. 2006)
- To rehabilitate degraded land (SLM Ethiopia; Smith 2010)
- To improve grazing land management (Danano 2007)
- As silage for dry season feed

### Management practices: Land preparation:

- Desho needs very good land preparation

### Preparation of planting materials:

- Splits of grass from root clump can be used as planting material
- Grass clumps should be uprooted and split into several splits
- Stem cutting of matured plant that has ≥ 3 nodes

### Planting:

- Recommended to plant at 10 cm by 10 cm intervals along bunds for SWC
- Recommended to plant at 50 cm by 50 cm intervals for grazing land management (ILRI forage unit experience)
- Remove the leafy part before planting to reduce competition before it establishes well
- Open the soil with hoes and place the split in the soil before pressing the basal soil around the seedling

### Fertilization:

- Compost/manure of about 4500 kg/ha for establishment and 1000 kg for maintenance (Danano 2007)
- Use about 100 kg/ha of fertilizer for establishment and 25 kg for maintenance (Danano 2007)
- After 2–3 years maintenance fertilizer application can be reduced (Danano 2007)

### Weeding:

- Needs continuous weeding and gap filling (SLM Ethiopia)



## Harvesting:

- Cut and carry system is encouraged (Smith 2010)
- Should be harvested at 8 cm high from ground level
- Highest yield can be obtained if first harvested at 4 months after planting (Gohl 1981)

## Economics of production:

- Desho provides a small business opportunity for Ethiopian farmers (sale of the cut and planting materials) (IPMS 2010; Shiferaw et al. 2011)
- The use of Desho for feed and land management is increasing rapidly

## Limitations for wider adoption:

- Shortage of inputs (planting material)
- The establishment and maintenance of Desho requires intensive labour (Danano 2007)
- Free grazing practice is another shortcoming for its sustainability

## References

- Danano, D. 2007. Improved grazing land management—Ethiopia. In: Liniger, H. and Critchley, W. (eds), *Where the land is greener*. Bern, Switzerland: WOCAT. pp. 313–316.
- Ecocrop. 2010. Ecocrop database. FAO.
- Gohl, B. 1981. Tropical feeds: feed information summaries and nutritive value. Food and Agriculture Organization of the United Nations.
- IPMS Ethiopia. 2010. Improved Productivity and Market Success of Ethiopian farmers.
- Shiferaw, A., Puskur, R., Tegegne, A. and Hoekstra, D. 2011. Innovation in forage development: Empirical evidence from Alaba Special District, Southern Ethiopia. *Development in Practice* 21(8):1138–1152.
- SLM Ethiopia. SLM knowledge: Technologies (Desho grass soil bund).
- Smith, G. 2010. Ethiopia: Local solutions to a global problem. (Available from <http://www.new-ag.info/en/focus/focusItem.php?a=1784>)
- Welle, S., Chantawaragul, K., Nontananandh, S. and Jantawat, S. 2006. Effectiveness of grass strips as barriers against runoff and soil loss in Jijiga area, northern part of Somalia region, Ethiopia. *Kasetsart Journal: Natural Science* 40:549–558).

The Nile Basin Development Challenge (NBDC) is funded by the CGIAR Challenge Program on Water and Food (CPWF). It aims to improve the resilience of rural livelihoods in the Ethiopian highlands through a landscape approach to rainwater management. It comprises five linked projects examining: 1) learning from the past; 2) developing integrated rainwater management strategies; 3) targeting and scaling out of rainwater management innovations; 4) assessing and anticipating the consequences of innovation in rainwater management systems; and 5) catalysing platforms for learning, communication and coordination across the projects.

The NBDC is implemented by a consortium comprising the International Livestock Research Institute, International Water Management Institute, World Agroforestry Centre, Overseas Development Institute, Nile Basin Initiative, Stockholm Environment Institute, Ethiopian Economic Policy Research Institute, Catholic Relief Services – Ethiopia, Oromia Regional Research Institute, Amhara Regional Agricultural Research Institute, Bahir Dar University, Ambo University, Nekemte University, the Ministry of Agriculture and the Ministry of Water and Energy.

Prepared by: Authors.....  
<http://www.nilebdc.org>